

of this area. In addition, a number of other hydrophytes, viz. *Cyperus* spp., *Vallisneria spiralis* L., *Potamogeton orispus* L., *Utricularia* spp., *Ranunculus* spp. and *Polygonum* spp. also commonly occur around the study area.

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38. ADDITIONS TO THE PTERIDOPHYTIC FLORA OF KUMAUN AND NAINITAL (WESTERN HIMALAYA)

Duthie (1906) was the first to catalogue the Pteridophytic flora of Kumaun upto to the frontiers of Garhwal, Tibet and Western Nepal. He recorded a total of 185 species of ferns belonging to 30 genera and 15 species of fern — allies spread over 6 genera based on the collections made by Strachey and Winterbottom during the year 1946-1849. Later, Loyal & Verma (1960), Pande (1972), Verma & Khullar (1980) and Pangtey *et al.* (1982) made significant contributions to the fern flora of Kumaun Himalaya. Further, Dhir (1980) made the most comprehensive study on the fern flora of North-Western Himalaya from

Kumaun to Kashmir based on his collections and earlier collections housed in different herbaria of India.

During the course of explorations of Pteridophytic flora of Kumaun and Naini Tal. 7 species of ferns and one species of fern allies were found to be new to the Pteridophytic flora of Kumaun. Among these 7 species, 4 species of ferns, i.e. *Polystichum prescottianum* (Wall. ex Mett.) Moore var. *castaneum* Clarke, *P. wilsonii* Christ., *Cystopteris dickieana* R. Sim. and *Pronephrium penangianum* (Hook.) Holtt. are new records for Kumaun. While *Selaginella involvens* (Swartz) Spring, *Polystichum*

MISCELLANEOUS NOTES

manmeiense (Christ) Nakaike and *P. piceo-paleaceum* Tagawa are new to the Pteridophytic flora of Naini Tal as well as Kumaun and three species of ferns, viz. *Athyrium flabellulatum* (Clarke) Tard-Blot, *A. puncticaule* (Bl.) Moore and *Dryopteris wallichiana* (Spreng.) Hyl. are new additions to the fern flora of Naini Tal. A perusal of earlier published records and herbaria indicate that these species have neither been collected nor reported so far from Kumaun and Naini Tal. This note, therefore, records the additions of these species to the Pteridophytic flora of Kumaun and Naini Tal with other relevant informations. Voucher specimens are housed in the Herbarium, Botany Department, D.S.B. College, Kumaun University, Naini Tal.

SELAGINELLACEAE

1. *Selaginella involvens* (Swartz) Spring, Bull. Sci. Brux. 10: 136. 1843.

Status: Occasional on moist-wet rocks. Plants curl into a ball like mass during the dry season.

Specimen examined: PITHORAGARH DISTRICT: near Thal and Tawaghat; NAINI TAL DISTRICT: near Bajoon, Chanfi and Patuwadangar (YPSP 73, 341, 342, 464, 550, 558).

ASPIDIACEAE

2. *Dryopteris wallichiana* (Spreng.) Hyl., Blot. Notis. 352. 1953.

Status: A high altitude species, commonly growing in the valleys of Kumaun Himalayas between 2,500-2,900 m under the shade of large bushes with a basket like habit. However, this species has recently been collected from Naini Tal, where it was found growing on moist and dark shaded situations and is extremely rare.

Specimens examined: NAINI TAL: near Pangote (YPSP 504).

3. *Polystichum manmeiense* (Christ.) Nakaike, Misc. Publ. Nat. Sci. Mus. Tokyo 141. 1982

Status: Rather rare, usually grows in very moist and wet rocks along the streamlets in and around 1,800 m.

Specimens examined: NAINI TAL DISTRICT: near Kilberry (Naini Tal), (YPSP 277, 278, 494, 495).

4. *P. piceo-paleaceum* Tagawa, Acta Phytotax. Geobot. 5: 255. 1936.

Status: Quite common around Naini Tal between 1,800-1950 m in moist-shaded forest floors, roadsides and rock crevices.

Specimens examined: NAINI TAL DISTRICT: around Naini Tal, way to Kilberry, behind snow view and near Pangote (YPSP 295, 299, 527, 529, 530, 533, 570).

5. *P. prescottianum* (Wall. ex Mett.) Moore var. *castaneum* Clarke, Trans. Linn. Soc. Lond. 2(Bot.) 1: 510. 1880.

Status: Frequent on open and exposed forest floors between 2,800-3,300 m around timber line.

Specimens examined: ALMORA DISTRICT: between Dwali to Phurkia (YPSP 93, 95).

Note: This taxon differs from *P. prescottianum* (Wall. ex Mett.) Moore, in having darker coloured and more prominently bicolourous scales on rachis and stipe and lamina being usually narrower.

6. *P. wilsonii* Christ., Bot. Gaz. 51: 353. 1911.

Status: Frequent among rocks and rocky habitats between 2,900-3,300 m in and around timber line.

Specimens examined: ALMORA DISTRICT: between Dwali to Phurkia en route to Pindari Glacier (YPSP 90, 101).

ATHYRIACEAE

7. *Athyrium flabellulatum* (Clarke) Tard-

Blot, Aspl. du Tonkin 81. t. 12. 1932.

Status: Extremely rare and grows on moist and humus rich forest floors along water courses between 1,600-1,800 m.

Specimens examined: NAINI TAL: near Dhobi Ghat (YPSP 537, 538, 539).

8. **A. puncticaule** (Bl.) Moore, Ind. Fil. 186. 1860.

Status: Rather rare but locally frequent near Pangote and Dhobi Ghat. Usually grows on moist and wet rocks near water courses in deep-shady ravines around 1,600-1,800 m.

Specimens examined: NAINI TAL: near Pangote and Dhobi Ghat (YPSP 542, 543).

9. **Cystopteris dickieana** R. Sim., Gard. Fram. Journ. ser. 2: 308. 1848.

Status: Infrequent between 2,000-3,300 m in rock crevices and shady-moist places.

Specimens examined: ALMORA DISTRICT: between Dwali to Phurkia en route to Pindari Glacier (YPSP 87).

THELYPTERIDACEAE

10. **Pronephrium penangianum** (Hook.) Holtt. Blumea 20: 110. 1972.

Status: Quite frequent near wet and open places especially recently cut slopes in Ramganga and Gori valleys upto 1,600 m.

Specimens examined: PITHORAGARH DISTRICT: Ramganga and Gori valleys (YPSP 68).

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